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## NOTES ON METEOROLOGY.

CLIMATE AND HYGIENE OF THE CONGO FREE STATE.—A recent publication on the climate, soil and hygiene of the Congo Free State (*Congrès National d'Hygiène et de Climatologie Médicale de la Belgique et du Congo, du 9 au 14 Août, 1897, 2me Partie, Bruxelles, 1898*) furnishes striking evidence of the rapid growth of our knowledge concerning portions of Africa that, within comparatively few years, were marked "Unexplored" on our maps. This volume comprises 890 pages, and will prove of the greatest value to those who wish to understand the physical and commercial conditions of the country of which it treats. Others, also, who have no particular interest in the Congo Free State itself, but who are anxious to know something concerning the conditions of life and health in a moist tropical climate, will find much valuable information in this report. Four hundred pages are devoted to the meteorology of the region, and contain fairly complete data from 65 stations. Twenty pages are concerned with the soil conditions, and the rest of the book is given up to an admirable discussion of the medical climatology. Probably that portion of the book which deals with the disease and death statistics, food and mode of living of the Europeans in the Congo Free State, will have the most interest for Americans just at the present time. As to the relative success of Europeans of different nationalities, it appears that, contrary to the usual rule, the northern peoples (Danes, Swedes, Norwegians) have succeeded better than those from the south (Italians). It should be said, however, in commenting upon this rather startling fact, that the Italians were engaged in the unhealthy occupation of railroad construction, while the Scandinavians were chiefly employed on board vessels on the river. Persons with nervous temperaments do not succeed well. The age at which it seems best for the European to begin his residence in the Congo Free State is between 25 and 35 years. White children born in the State should be brought up in Europe. The previous condition of health in the immigrant from northern latitudes is of great moment. Dyspeptics suffer severely in a tropical climate; heart troubles are aggravated; phthisical patients are frequently much benefited; alcoholism leads to many tropical disorders.

The necessity of a more or less frequent return from the enervating monotony of the tropics to the stimulating, changeable

weather conditions of northern latitudes, is universally acknowledged. The length of time during which Europeans may remain in the tropics without serious harm varies according to the physical condition of the individual, his mode of living, etc. Under existing conditions, colonization, properly so called, meaning the permanent establishment of the white race, does not seem possible in western tropical Africa except in a few specially favored places.

It may be of interest to note here an opinion recently expressed by Colonel J. C. Gore, (British) Colonial Secretary of Sierra Leone (*Geographical Journal*, Dec., 1898, p. 606): "Acclimatization may be possible in other tropical countries, but West Africa is exceptional. \* \* \* I attribute my escape from the effects of the climate to *great good fortune*, and, of course, being very careful in my living."

RAINFALL ON THE GREAT PLAINS.—The rainfall on the Great Plains is briefly discussed in the *Journal of School Geography* for January, 1899, by N. W. Fenneman. The problem is one of very considerable interest. This intermediate region, between a rainfall sufficiently large for successful agriculture on the east, and a rainfall too small for successful agriculture on the west, has been the scene of a pathetic struggle on the part of the farmers to make a living out of the soil, where nature seems to have decreed that there shall not permanently be enough rain to enable them to do so with profit. The sudden filling up of the so-called Rain Belt in western Nebraska and Kansas, and eastern Colorado, some years ago, and the subsequent depopulation of the region, when the conditions were not found to be suitable for farming, are well known in the history of our western country. Very graphic is the description given by Willard D. Johnson in the *National Geographic Magazine* for December last of the present conditions of the central portion of the Great Plains, known as the High Plains. Mr. Johnson says: "There are towns on the High Plains. At least, there were towns in the days of the great 'boom.' Of some of these there now remain neither population nor buildings; others show a scattering of buildings, though empty ones, and in a few, among many empty buildings, is to be found a family here and there. These vestiges of boom creation have been merely waiting for something that has never happened, that never can happen—the blossoming of the desert. At one time across the interspaces the farmer swarmed, but he, too, is gone, as a class. As in the towns, so on the great flats in between, of the flocks that once settled

down and then took flight again, a lingering representative is still to be found here and there; and he is waiting for a change of climate, for the farm on the High Plains is nothing more than a body of land, surrounded by wire fence. It can never be anything else except as, in half a decade or so, sod finally heals the furrows of the futile plow and it goes back to prairie and cattle."

CLIMATE OF PUERTO RICO.—Prof. Mark W. Harrington, whose name is well known to meteorologists the world over, is now on duty in Puerto Rico, engaged in organizing a section of the *Climate and Crop Service* of the United States Weather Bureau. The *Monthly Weather Review* for September (issued Nov. 22) contains a preliminary note, by Prof. Harrington, on the climate of Puerto Rico. The published observations are very scanty, indeed, consisting of a total of about nine years at San Juan only, and these are fragmentary, being scattered through twenty years. The mean temperature, according to the records, is  $78.9^{\circ}$ , with the small seasonal change characteristic of the tropics. February is the coldest month on the average, with a mean temperature of  $75.7^{\circ}$ , and June is the hottest, with  $81.5^{\circ}$ . The coldest month on record is January, 1895 ( $70.0^{\circ}$ ), and the warmest is June, 1878 ( $86.0^{\circ}$ ). The average change from the coldest to the hottest month is  $6^{\circ}$ . The minimum temperature on record at San Juan is  $57.2^{\circ}$ , in January, 1894, and the maximum is  $100.8^{\circ}$ , in May, 1878. At San Juan the year is divided into a wet and a dry season. The dry season, with a rainfall of 10 or 11 inches, embraces the months from December to March, and is the most attractive season, being relatively dry and cool. This is the proper season for the visits of northerners to San Juan. The climate is then mild and safe. The wet season includes the other eight months of the year, with a rainfall of 48 or 49 inches. The total annual rainfall is nearly 60 inches at San Juan. Rainy days are rare, however, the rain coming in the afternoon or evening, and there is no impression of a rainy climate, except that everything seems fresh and clean. Hurricanes occasionally visit the island during the hurricane season (August–September).

METEOROLOGICAL CHART OF THE GREAT LAKES.—Within the past few years the Weather Bureau has given special attention to the study of the meteorological conditions of our Great Lakes, with a view to giving navigators of those waters all the information possible concerning the atmospheric conditions, storms, fog, currents, etc. The *Meteorological Chart of the Great Lakes*, issued Jan. 4,

presents a summary for the year 1898. The relative frequency of fog during the season of navigation (April 1–December 15) is indicated by five different styles of shading, denoting respectively 0-10, 11-20, 21-30, 31-40, 41-50 days with fog. A “day with fog” means a day on which fog sufficiently dense to obscure objects distant 1,000 feet prevails for at least an hour. Fog was observed the greatest number of days (60 out of 259) in the region east of Keweenaw Point. The investigation of fog during the past season has established two important points. *First*, that fog reports from shore stations cannot be depended on to establish fog conditions on the Lakes, since fog was reported continuously on the Lakes while very little appeared at land stations. *Second*, that the wind direction appears to have but little influence on the formation of fog, especially on the Upper Lakes. During the season, 143 vessels were totally or partially lost. Of these, 39 were total losses, all being due to gales, and 104 were partial losses, 22 being due to fog and 82 to gales. The number of lives lost was 96.

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